

From the library of K4CCF

INSTALLATION AND OPERATING INSTRUCTIONS FOR  
RADIO RECEIVER MODEL SX-43  
GENERAL INFORMATION

## 1. INSTALLATION

It is recommended that, upon receipt, the carton and then the unpacked receiver be carefully examined for any damage which may have occurred during shipment. Should any damage be apparent, immediately file claim with the carrier, stating the extent of damage.

**IMPORTANT.** Unless otherwise marked, this receiver is operated from 105 to 125 volts 50-60 cycle a-c power. If in doubt call your local utility company for information.

Connect the R-42 Reproducer, or the R-44, as the case may be, to the 500 and "C" terminals on the SX-43.

Turn the VOLUME control to the left as far as possible. (See Fig. 2) This turns off the radio. Plug the power cord into the a-c outlet.

Attach an antenna (aerial) to the post marked A-1. This antenna wire should be, preferably, outdoors above surrounding structures and from 25 to 100 feet long. Attach a wire from a good ground to the post marked GND. In general the better the antenna system, the better the signal will be heard.

Having followed instructions to this point you are now ready to operate your receiver. Let's first tune in a-m (standard broadcast) stations.

## 2. GENERAL OPERATION

1. To turn the receiver on, the VOLUME control is turned to the right to about 4 on the knob scale. When the receiver is on, the dial scales and the meter will light up.
2. Turn the BAND SELECTOR knob left to the red dot. (See Fig. 3)
3. Set the three toggle switches to the "right" hand position. (See Fig. 4)
4. Set four of the six right-hand control knobs to the following positions: "SELECTIVITY" to red dot, "RECEPTION" to red dot, "SENSITIVITY" to 10, and "VOLUME" to 4 or the desired amount of volume. (See Fig. 5)

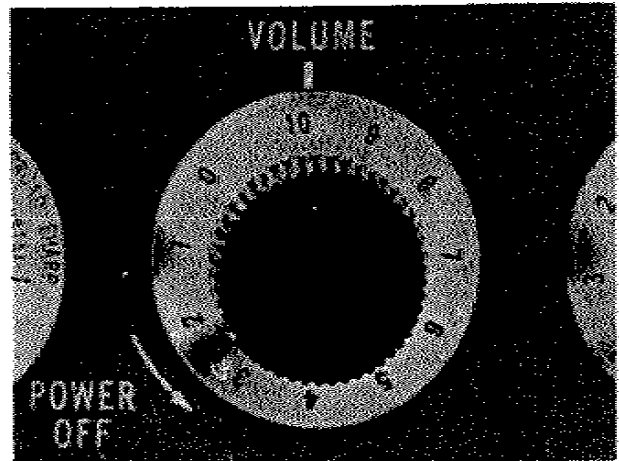


Figure 2. View showing Volume Control

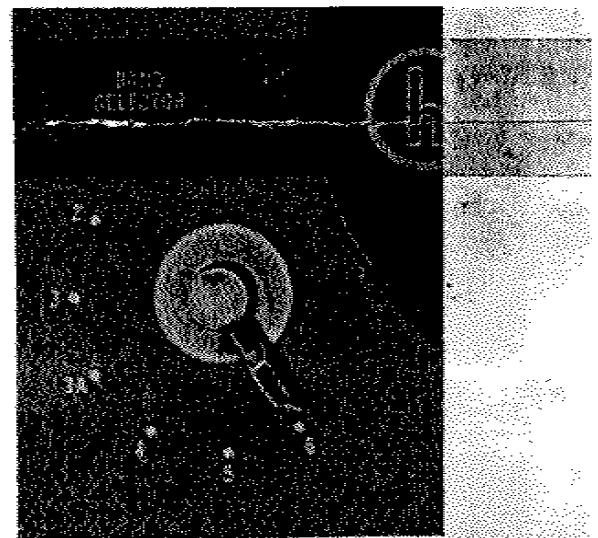


Figure 3. View showing Band Selector Switch



Figure 4. View showing three toggle switches

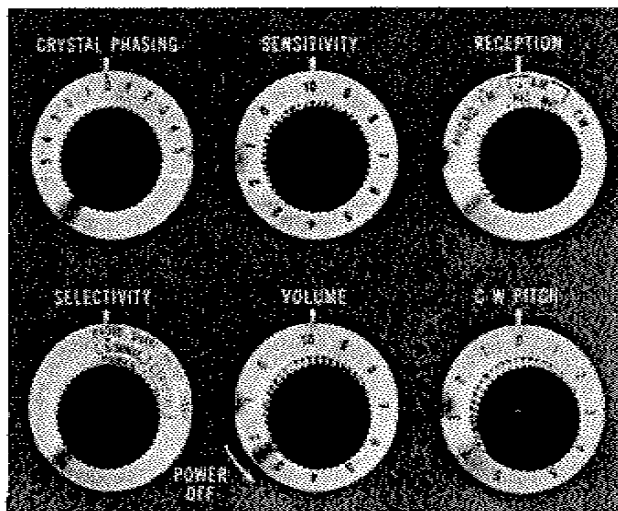


Figure 5. View showing six right hand controls

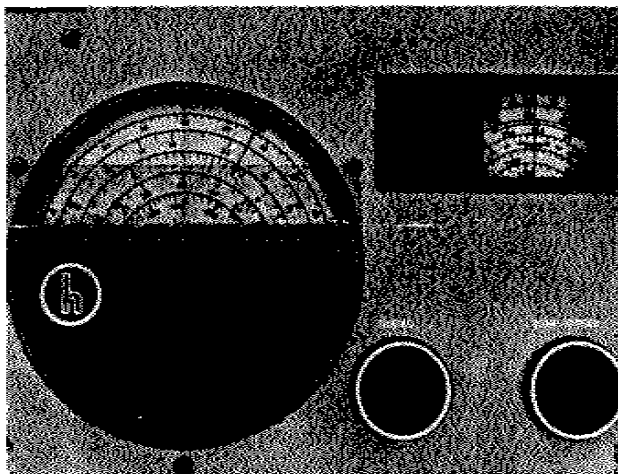


Figure 6.  
View showing Bandsread and Main Tuning Dial

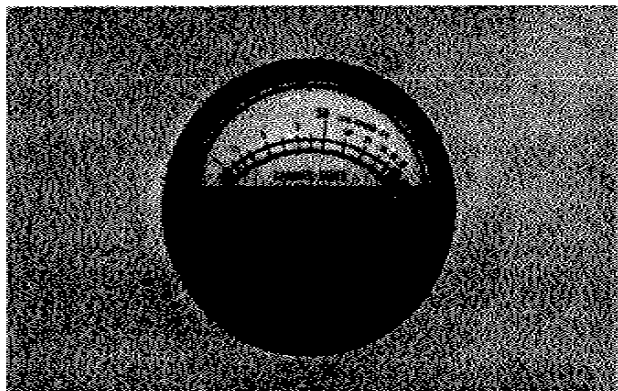


Figure 7. View showing Carrier Meter

5. Set the bandsread (fine tuning) dial to the high end of the dial, (counterclockwise).

6. Now tune in stations by tuning with the main control knob. (See Fig. 6) As the station is tuned in, the carrier meter needle (See Fig. 7) will move from the left side of the scale to the right. Carefully tune the receiver by causing the meter needle to move as far to the right as possible. At this point the receiver is properly tuned to the station.

7. To control the volume, adjust the VOLUME control (See Fig. 2) by turning it to the right for a louder signal or to the left for a softer signal.

8. The frequency calibration on the main tuning dial for the broadcast band is shown on the scale at the bottom of the dial. (See Fig. 6). This scale as all other scales is calibrated in kilocycles and tunes over the broadcast band from 540 to 1650 kc.

9. The next control which will be of interest to you, will be the TONE switch. (See Fig. 4). When it is set to the left, the receiver produces substantially all musical tones as sent out by the radio station. However, by setting this control to BASS, low notes will be amplified.

10. The next control in sequence of importance is the SELECTIVITY control (See Fig. 8). This control is very useful when it is desired to tune in a weak station on a frequency close to a powerful one, in which instance the control should be switched to SHARP.

11. The knobs for CRYSTAL PHASING, RECEPTION, C.W. PITCH, and SENSITIVITY should in all cases be left set at the red dot or "0".

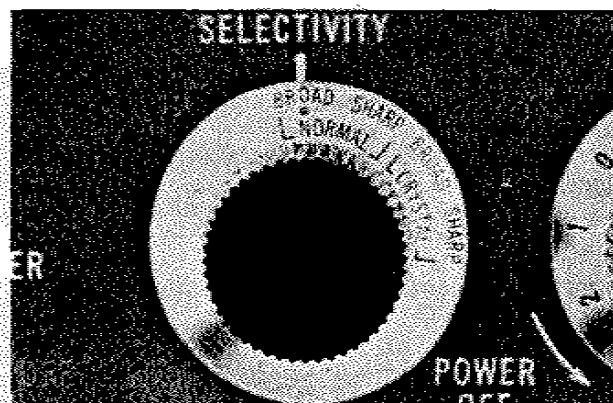


Figure 8. View showing Selectivity Control

Thus far we have tuned the receiver for a-m reception. If it is desired to use it on f-m reception, all controls should be set as previously described with the exception of the following:

1. The RECEPTION knob should be switched to FM (green dot).

2. The BAND SELECTOR switch should be set on the green dot. This covers the band 86 to 109 mc. Most f-m stations are on this band; the few that are not can be tuned in by changing the BAND SELECTOR knob to band 5, 44 to 55 mc.

3. Tune in f-m stations by turning the BAND-SPREAD tuning knob until the BANDSPREAD tuning dial indicates the desired f-m frequency. As the station is being tuned, the meter pointer will deflect when tuned to a transmitted signal.

When meter pointer is at maximum deflection the station is tuned in.

4. The carrier level meter reads the relative signal strength received as well as indicating when the signal is properly tuned in by the maximum deflection of the meter needle. When using the carrier level meter, the "Reception" switch should be set to the RED dot for AM reception or to the GREEN dot for FM reception. The "Sensitivity" control must be set to 10 and the volume controlled by the "Volume" control.

So far we have covered three bands of the receiver (Broadcast, and the f-m bands 86-109 mc and 44-55 mc). For the other three bands of the set, operation is the same, the only difference being in the setting of the BAND SELECTOR switch knob, which may be turned to the desired band.

## DETAILED AND TECHNICAL OPERATING INSTRUCTIONS

### 1. GENERAL

The Model SX-43 is a 11 tube superheterodyne radio receiver designed to provide amplitude modulated (AM) reception over the frequency range of 540 kc to 55 mc and frequency modulated (FM) reception over the frequency range of 44 to 55 mc and 86 to 109 mc bands. Calibrated bandspread is provided for the 80, 40, 20, and the 10 meter Amateur bands.

#### FREQUENCY COVERAGE

BAND	COVERAGE	TYPE OF RECEPTION
1	.540 to 1.65 mc	AM/CW
2	1.65 to 5.0 mc	AM/CW
3	5.0 to 15.1 mc	AM/CW
3A	13.9 to 14.4 mc	AM/CW
4	15.1 to 44.0 mc	AM/CW
5	44.0 to 55.0 mc	AM/FM
6	86.0 to 110 mc	FM

Adequate overlap is provided at ends of all bands.

The receiver as normally supplied is designed to operate from a 105 to 125 volts 50/60 cycle, single phase source of a-c power. These operating instructions also cover Universal Models which operate from a 105 to 250 volts, 25/60 cycle single phase a-c source.

### 2. A-C OPERATION

Be sure line voltage is 105 to 125 volts and frequency is 50 to 60 cycles before inserting power cord plug into power outlet. Be sure all tubes are securely inserted in their proper sockets before receiver power is turned on. The chart below lists the current and voltage data.

Power Consumption . . . . .	90 Watts
Frequency . . . . .	50/60 Cycles
Line Voltage . . . . .	117 Volts
Line Current . . . . .	0.77 Amperes

During a-c operation, the shorting plug supplied with the receiver must be in the octal socket on the rear apron of the chassis.

### 3. D-C OPERATION

The receiver may be operated from a 6 volt d-c source, generally a storage battery, and a 270 volt d-c supply in the form of "B" batteries or vibrator type power pack. Consult the

chart on power requirements at the end of this paragraph and provide battery or power pack facilities capable of supplying these demands. The receiver is connected to the d-c supply as follows:

1. Remove the octal shorting plug for a-c operation from the socket SO-1 located on the rear apron of the receiver chassis.

2. Wire an octal plug, as shown in Fig. 9, and plug it into socket SO-1. Use #19 (AWG) wire leads for the 270 volt "B" supply connections to pins #3 and #5, and #12 (AWG) wire leads for the 6 volt battery connections to pins #1, #7, and #8. **CAUTION:** Check the wiring carefully before connecting to the battery supply. The chart below lists the current voltage data.

"B" Voltage . . . . .	270 Volts
"B" Current . . . . .	105 ma.
Filament Voltage . . . . .	6 Volts
Filament Current . . . . .	3.8 Amperes

Total battery drain when operating from a 6-volt vibrator power supply is approximately 11 amperes.

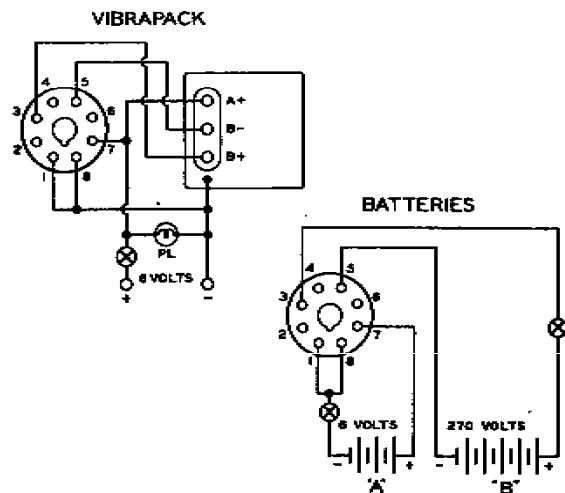


Figure 9. Octal plug wiring diagram

### 4. OUTPUT CONNECTIONS

Output connections for the speaker are provided for on the rear apron of the chassis. Two output impedances are available. Either the

500 or the 5,000 ohm speaker connection may be used according to the output impedance desired. This arrangement of dual output impedances will accommodate most requirements. The Hallcrafters Model PM-23 speaker requires 5000 ohms impedance; the Hallicrafters Model R-42 and R-44, requires 500/600 ohms. However, any standard type, permanent magnet dynamic speaker with proper output transformer may be connected to the output terminals. If the permanent magnet dynamic speaker impedance is unknown, try the 5000 ohm and then the 500/600 ohm impedance, and use the one which gives the better tone quality and volume.

## 5. PHONO INPUT CONNECTION

A receptacle is provided on the rear apron of the chassis for connecting a phonograph record player to the receiver. This receptacle is designed to accommodate a Cinch, type M-93, pin connector plug. (See Fig. 10 for diagram)

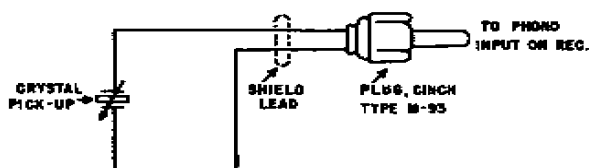


Figure 10. Phono input diagram

## 6. ANTENNA AND GROUND CONNECTIONS

The Model SX-43 is designed for a 300 ohm antenna impedance. The antenna impedance is not critical and excellent reception can be obtained from an antenna of from 50 to 600 ohm impedance. For maximum performance, the best possible antenna should be employed.

The antenna terminals on the Model SX-43 are arranged for any type of antenna from those requiring a ground to those using a transmission line. The transmission type of antenna connects to the A-1 and A-2 terminals whereas a single wire antenna utilizes terminal A-1 for the antenna lead. A-2 and GND terminals must be connected together and connected to a good ground.

## 7. DETAILED OPERATIONS

a. Controls and Their Functions. In order to obtain the desired results from the receiver, it is recommended that you become familiar with the function of each control. Red indicators on the controls for broadcast reception and green for f-m reception are there to simplify operation. Controls and their functions are as follows:

(1) BAND SELECTOR. The BAND SELECTOR knob operates the bandswitch to select the desired band frequencies.

(a) General Coverage Dial. The general coverage dial has four calibrated scales and a logging scale. Three scales are calibrated in megacycles and the broadcast scale is calibrated in kilocycles. The outer logging scale is divided into 100 divisions for logging use. The dial settings for the various amateur bands are indicated on the main tuning dial by red lines and the abbreviations 80 M, 40 M, etc. directly above the lines. When tuning the amateur bands with the calibrated bandspread dial, the general coverage dial must be set at the setting corresponding to the amateur band desired. Since the general coverage and bandspread tuning systems are electrically related on the first four bands, it is necessary to set the bandspread dial to the high frequency end or minimum capacity when tuning the receiver with the general coverage dial control to obtain correct receiver frequency readings on the general coverage dial.

(b) Bandspread Dial. The bandspread dial has four scales calibrated for the amateur bands and two scales calibrated for the two high frequency FM bands. The first four scales are calibrated to read receiver frequencies in kilocycles when the general coverage dial has been set to the corresponding indexing line. All FM and the 6 meter amateur band tuning is done with the bandspread dial as the general coverage dial and condenser is switched out of the circuit on bands 5 and 6. On band 5 the receiver employs dual conversion, substantially reducing image interference and permitting normal bandwidth for 6 meter AM amateur reception.

(2) NOISE-LIMITER-ON Switch. This switch opens or closes the noise limiter circuit and is to be set at ON when the operator wishes to limit excessive noise resulting from automobile ignition and other forms of noise interference.

The noise limiter circuit "clips" the intermittent noise peaks down to the level of the desired signal where they tend to become unnoticeable.

(3) RECEIVER-STANDBY Switch. When set at STANDBY, this switch renders the receiver

inoperative, while transmitting or for any other purpose, although the tube heaters remain hot and ready for instant use.

(4) CRYSTAL PHASING Control. This control permits the discrimination of code signals whose frequencies are very nearly the same. The SELECTIVITY control must be set at one of its two crystal selectivity positions when using the phasing control.

It is extremely simple to attain single signal c-w reception with the SX-43. First, set the RECEPTION switch at CW and the SELECTIVITY control at CRYSTAL SHARP. Pick a good solid c-w signal, preferably a commercial station because a commercial is likely to stay on long enough for you to complete the phasing adjustment for single signal reception.

You will find on tuning across this signal that it has two amplitudes. Tune first to the weaker of these two amplitudes. Now, turn the CRYSTAL PHASING control until the weaker of the two amplitudes is reduced to a minimum. Then, tune to the stronger of the two amplitudes and adjust the PITCH control to a tone most pleasing to you. This adjustment for single signal selectivity will hold with no further adjustment unless you change the phasing control. (See Fig. 11 for an illustration of single signal operation.)

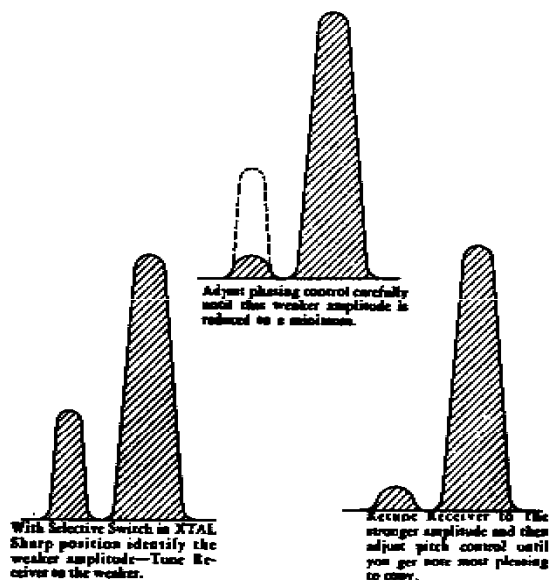


Figure 11.  
Illustration showing Single Signal Operation

(5) SELECTIVITY Control. This control determines the sharpness of the response. Four degrees of selectivity are provided, ranging from CRYSTAL SHARP for c-w code reception under difficult receiving conditions to NORMAL BROAD response for BC reception.

1. BROAD I-F (for high fidelity reception).
2. SHARP I-F (reduced adjacent channel interferences and gives less highs).
3. CRYSTAL BROAD (similar to sharp i-f but sharper cutting on sidebands).
4. CRYSTAL SHARP (position of extreme selectivity - practically no sideband content).

(6) FOF Control. This control selects the tone qualities desired by the operator. The types of response available are LOW, and HIGH.

(a) LOW. The high audio frequencies are attenuated to provide a minimum response for voice reception when the background noise level is objectionably high.

(b) HIGH. The bass and high frequencies are passed at the same level thereby providing as near a true reproduction of the original transmitted signal as possible. The response is essentially flat between 70 and 8,000 cycles per second for good fidelity reception.

(7) CW PITCH Control. This control varies the frequency of the beat frequency oscillator thus varying the pitch of the c-w code signal as desired.

(8) SENSITIVITY Control. This control adjusts the sensitivity by varying the resistance in the cathodes of the r-f and i-f amplifiers. Turning the control to the right increases the sensitivity. This control must be set at maximum sensitivity when using the carrier level meter. At any other setting of this control, readings of the carrier meter are meaningless.

## 8. "S" METER ADJUSTMENT

Adjustment of the "S" meter control is performed by varying the knurled knob located on the rear apron of the receiver chassis. This control enables you to properly set the "S"

meter to zero. In order to make the adjustment correctly, advance the SENSITIVITY control to 10. Set the "reception" switch to AVC position. Short the two antenna terminals to the ground terminal and tune receiver off station. Then

adjust the "S" meter control until pointer rests at "0". Remove the short from the antenna terminals and the meter will indicate the relative carrier strength of each incoming signal as it is tuned in.

## SERVICE

### 1. REPLACING TUBES

All tubes are accessible at the top of the chassis through the hinged cover of the cabinet. When replacing tubes, check tube type carefully and replace with the correct type. Refer to top view of the chassis to determine the location of the tubes (See Fig. 12).

### 2. REPLACING DIAL LAMPS

The receiver employs three dial lamps with the bayonet type sockets to illuminate the main and bandspread tuning dials as well as the

meter scale. The lamps are to be replaced with 6-8 volt, 250 ma, (blue bead) #44 G.E. type, or equivalent. The color code referred to is the color of the glass bead above the glass stem inside the envelope of the lamps.

### 3. SERVICE OR OPERATING QUESTIONS

For further details regarding operation or servicing of the receiver, contact your dealer directly. Make no service shipments directly to the factory before first writing for authorization and instructions. The factory cannot accept responsibility for unauthorized shipments.

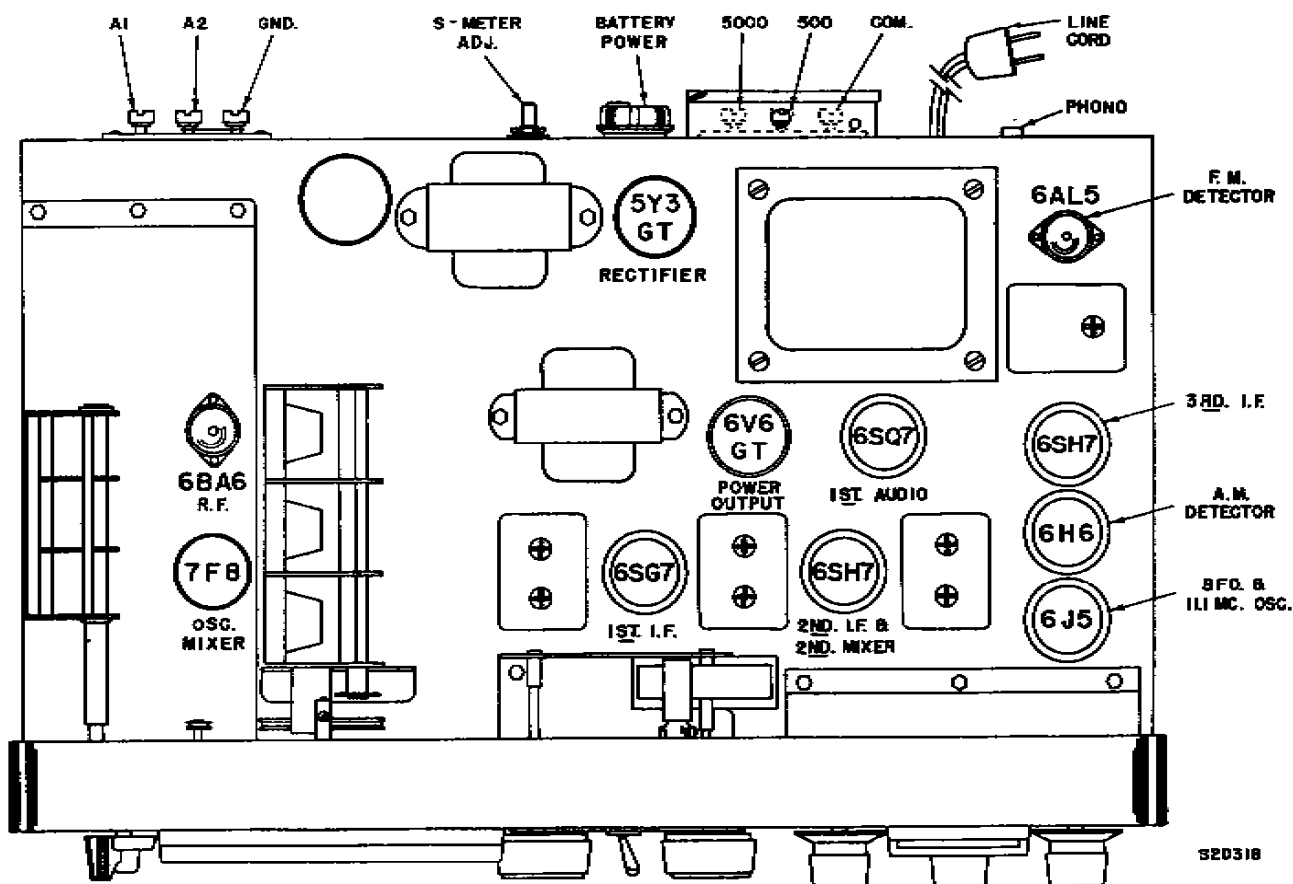


Figure 12. Top view of Chassis

#### REMOTE CONTROL OPERATION

Connect a single pole single throw relay to pins #5 and 8 on PL1 located on the rear apron

of the receiver. Receiver "SEND- RECEIVE" switch is then placed in "SEND" position. When the Transmitter is turned on the Receiver is automatically disabled.

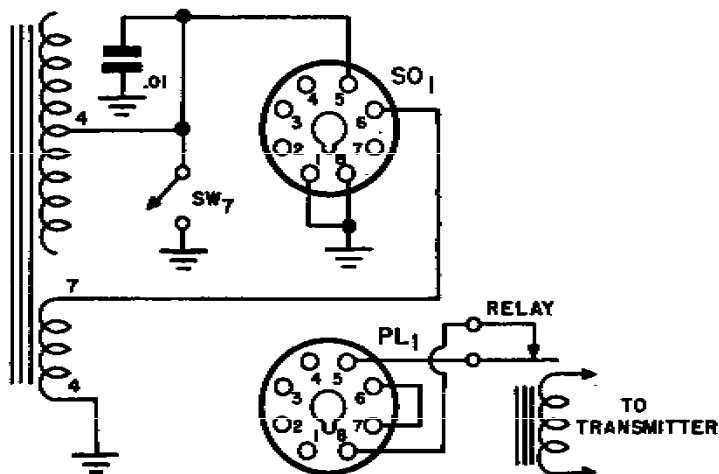
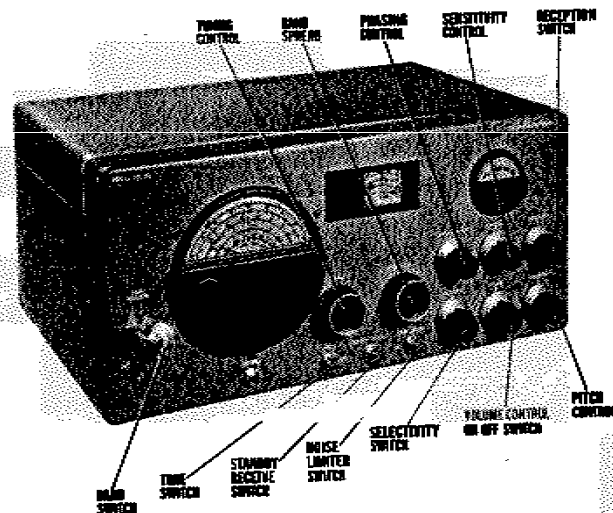


Figure 13. Schematic Remote Control Operation

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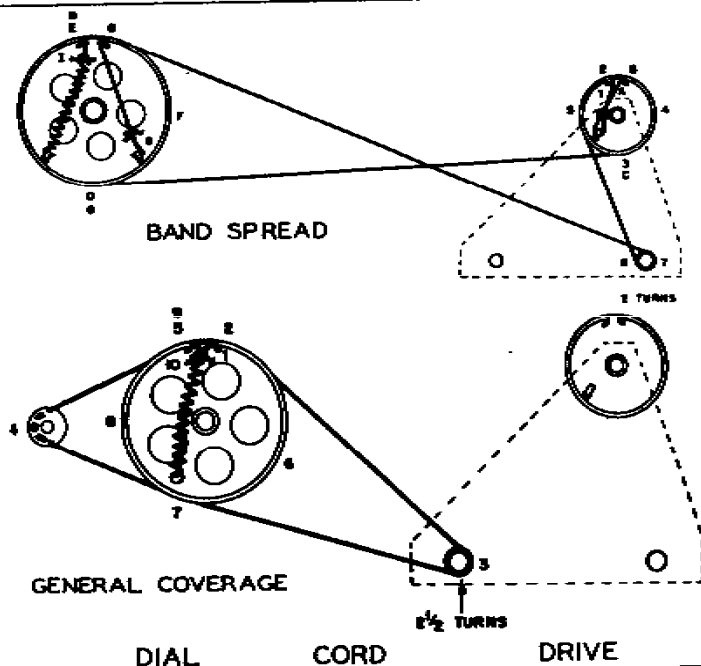
# **HALLICRAFTERS MODEL SX-43**

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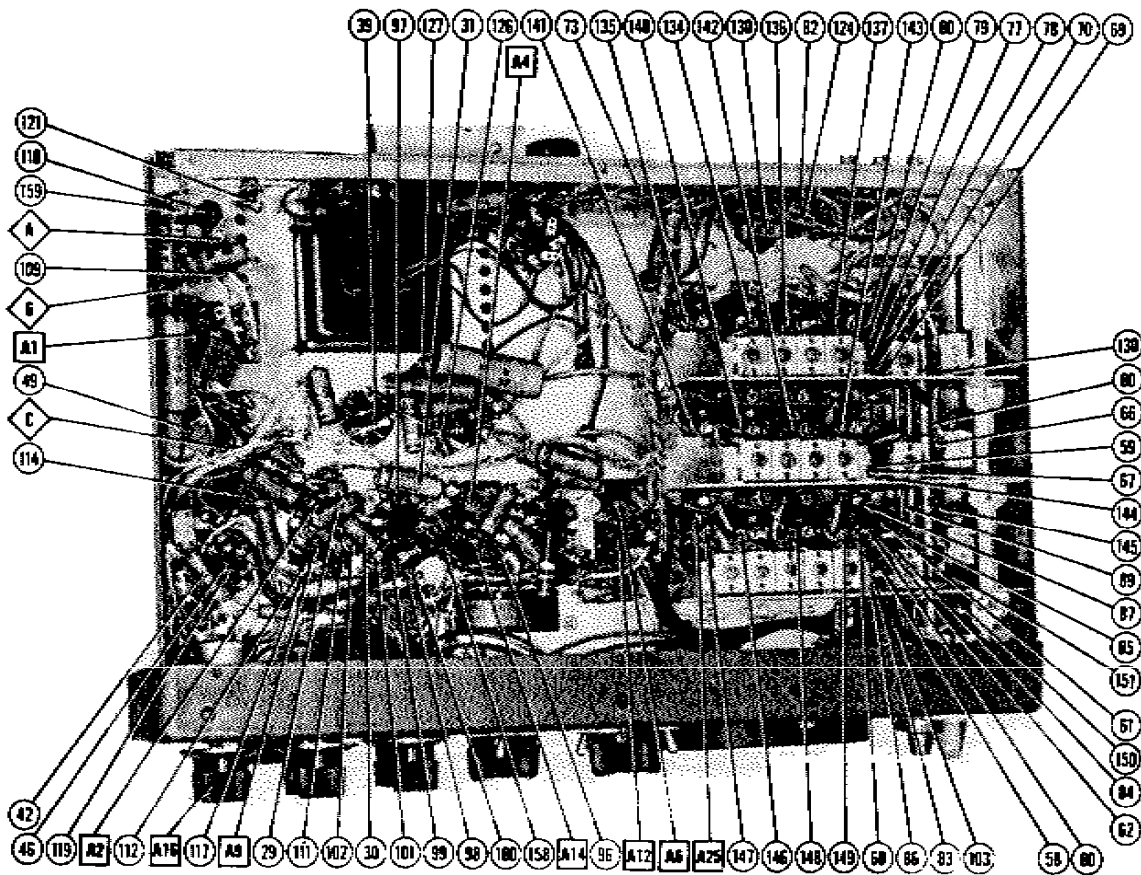
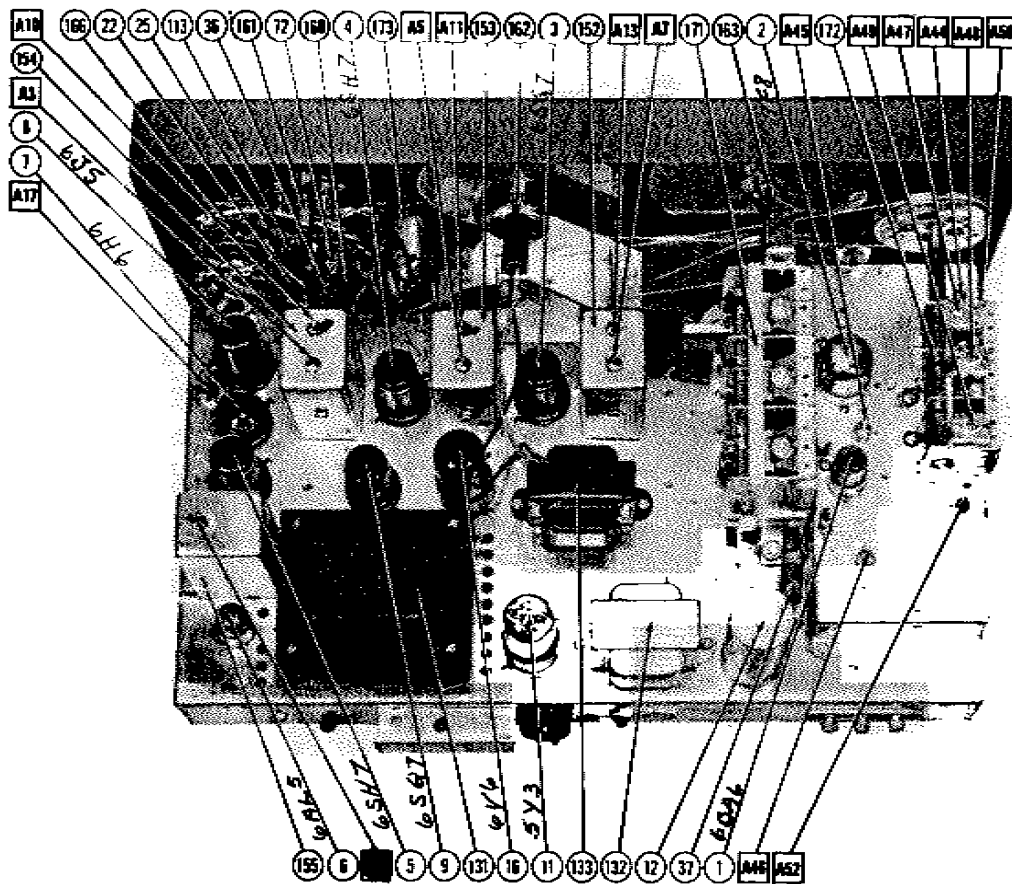


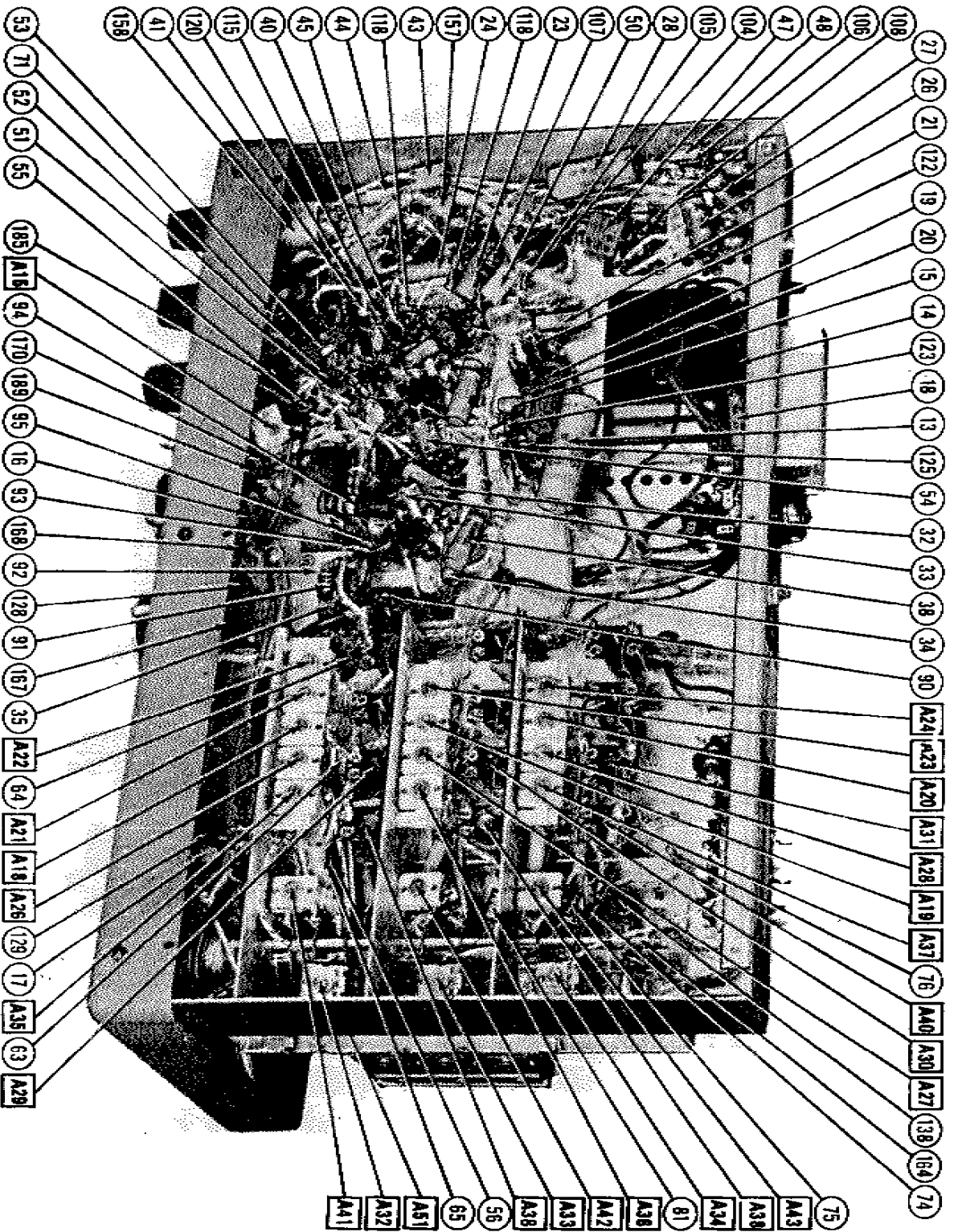
HALLICRAFTERS MODEL SX-43

TRADE NAME	Hallcrafters, Model SX-43
MANUFACTURER	Hallcrafters Co., 5th & Kostner Avenues, Chicago 24, Ill.
TYPE SET	AC Operated Multi-Band AM-FM Commercial Communications Receiver
TUBES (ELEVEN)	Types, 6BA6 RF Amp., 7F8 Converter, 6SG7 1st IF Amp., 6SE7 2nd IF-2nd Mixer, 6SN7 3rd IF Amp., 6AL5 FM Ratio Det., 6H6 AM Det., 6J5 BFO-2nd Osc., 6SQ7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.68 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1700KC
SHORT WAVE	1.7-5MC, 5-16MC, 14-14.4MC, 15.5-44MC, 44-56MC
FREQ. MOD.	44-56MC, 86-109MC



## **HALLICRAFTERS MODEL SX-43**





## PARTS LIST AND DESCRIPTIONS

### TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	IDENTIFICATION CODES
		HALLICRAFTERS PART No.	STANDARD REPLACEMENT		
1	10 AMP.	68A6	68A6	7BK	
2	Converter	7B3	7B3	8BM	
3	1st IF AMP.	68A7	68A7	8BK	
4	2nd IF AMP.	68A7	68A7	8BK	
5	3rd IF AMP.	68A7	68A7	8BK	
6	1st AF AMP.	68A5	68A5	8BK	
7	2nd AF AMP.	68A5	68A5	8BK	
8	AF AMP.	68A5	68A5	8BK	
9	AF AMP.	68A5	68A5	8BK	
10	AF AMP.	68A5	68A5	8BK	
11	Rectifier	68A7	68A7	8BK	

## CAPACITORS

Capacity values given in the rating column are in mfd. for electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REPLACEMENT DATA		RMA BASE TYPE	IDENTIFICATION CODES
		HALLICRAFTERS PART No.	ANOVOL PART No.		
12A	50 450	45B113	45B113	7BK	
12B	50 450	45B113	45B113	7BK	
13	20 450	45B113	45B113	7BK	
14	10 450	45B113	45B113	7BK	
15	10 450	45B113	45B113	7BK	
16	10 450	45B113	45B113	7BK	
17	10 450	45B113	45B113	7BK	
18	10 450	45B113	45B113	7BK	
19	10 450	45B113	45B113	7BK	
20	10 450	45B113	45B113	7BK	
21	10 450	45B113	45B113	7BK	
22	10 450	45B113	45B113	7BK	
23	10 450	45B113	45B113	7BK	
24	10 450	45B113	45B113	7BK	
25	10 450	45B113	45B113	7BK	
26	10 450	45B113	45B113	7BK	
27	10 450	45B113	45B113	7BK	
28	10 450	45B113	45B113	7BK	
29	10 450	45B113	45B113	7BK	
30	10 450	45B113	45B113	7BK	
31	10 450	45B113	45B113	7BK	
32	10 450	45B113	45B113	7BK	
33	10 450	45B113	45B113	7BK	
34	10 450	45B113	45B113	7BK	
35	10 450	45B113	45B113	7BK	
36	10 450	45B113	45B113	7BK	
37	10 450	45B113	45B113	7BK	
38	10 450	45B113	45B113	7BK	
39	10 450	45B113	45B113	7BK	
40	10 450	45B113	45B113	7BK	
41	10 450	45B113	45B113	7BK	
42	10 450	45B113	45B113	7BK	
43	10 450	45B113	45B113	7BK	
44	10 450	45B113	45B113	7BK	
45	10 450	45B113	45B113	7BK	
46	10 450	45B113	45B113	7BK	
47	10 450	45B113	45B113	7BK	
48	10 450	45B113	45B113	7BK	
49	10 450	45B113	45B113	7BK	
50	10 450	45B113	45B113	7BK	

## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		IDENTIFICATION CODES
		HALLICRAFTERS PART No.	STANDARD REPLACEMENT	
112	2.2 Meg.	RC20A225K	RC20A225K	
113	150K	RC20A150K	RC20A150K	
114	150K	RC20A150K	RC20A150K	
115	150K	RC20A150K	RC20A150K	
116	150K	RC20A150K	RC20A150K	
117	150K	RC20A150K	RC20A150K	
118	150K	RC20A150K	RC20A150K	
119	150K	RC20A150K	RC20A150K	
120	150K	RC20A150K	RC20A150K	
121	150K	RC20A150K	RC20A150K	
122	150K	RC20A150K	RC20A150K	
123	150K	RC20A150K	RC20A150K	
124	150K	RC20A150K	RC20A150K	
125	150K	RC20A150K	RC20A150K	
126	150K	RC20A150K	RC20A150K	
127	150K	RC20A150K	RC20A150K	
128	150K	RC20A150K	RC20A150K	
129	150K	RC20A150K	RC20A150K	
130	150K	RC20A150K	RC20A150K	

## TRANSFORMER (POWER)

ITEM No.	RATING	HALLICRAFTERS PART No.	STANDARD REPLACEMENT	IDENTIFICATION CODES
131	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
132	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	

## FILTER CHOKE

ITEM No.	RATING	HALLICRAFTERS PART No.	STANDARD REPLACEMENT	IDENTIFICATION CODES
133	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	

## TRANSFORMER (OUTPUT)

ITEM No.	RATING	HALLICRAFTERS PART No.	STANDARD REPLACEMENT	IDENTIFICATION CODES
134	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	

## R F COILS

ITEM No.	RATING	HALLICRAFTERS PART No.	STANDARD REPLACEMENT	IDENTIFICATION CODES
135	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
136	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
137	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
138	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
139	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
140	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
141	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
142	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
143	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
144	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
145	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
146	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
147	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
148	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	
149	117V AC 1500 CT 1.5 2V AC 8 3V AC 4.0A	RC20A150K	RC20A150K	

## PARTS LIST AND DESCRIPTIONS (Continued)

## CAPACITORS

Capacity values given in the rating column are in mfd. for electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES	
		HALLICRAFTERS PART No.	AEROVOX PART No.	CORNELL-DUBIER PART No.	SOLAR PART No.	SPRAGUE PART No.	INSTALLATION NOTES
60	7500. Comp.	44A159					
61	500	C2200J510K	1488-00005	5N545	MO-5-45	17H-45	Sec. Plate Bypass
62	500	C2200J510K	1489-0001	5N571	MO-5-51	17H-51	Sec. Grid Cap.-Cer.
63	500	C2200J510K					Sec. Coupling-Cer.
64	500	C2200J510K					Fixed Pad.
65	15	500	1484-0015	185015	MO-5-215	MS-415	Fixed Trimmer-Cer.
66	25	500	47A14	5N525	MO-5-425	MS-425	RF Coupling-Cer.
67	25	500	47A141	5N525	MO-5-485	MS-485	Trans.
68	1500	350	47A61	1487-00025	145D15	17H-215	RF Decoupling-Cer.
69	1500	350	47A61	1487-0015	145D15	17H-215	RF Screen Bypass-Cer.
70	10000	350	47A157	1484-01	145D15	17H-215	RF Cathode Bypass-Cer.

Note-Not used in some models.

## CONTROLS

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES	
		HALLICRAFTERS PART No.	ICC PART No.	CLAIRBROT PART No.	INSTALLATION NOTES	SPRAGUE PART No.	INSTALLATION NOTES
71A	2 Wgt.	253601	D18-159	M-46-2	Volume Control		
71B	Switch	Not Req.	A	Not Req.	Attach to 71A per instructions		
72A	10K2	253577	D18-118	M-30-V	Sensitivity Control		
73	150K2	253588	W-500	43-500	Attach to 72A per instructions		

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA				IDENTIFICATION CODES	
		HALLICRAFTERS PART No.	ICC PART No.	CLAIRBROT PART No.	INSTALLATION NOTES	SPRAGUE PART No.	INSTALLATION NOTES
74	75	R20A150K	RTB-1 Meg.	RTB-1 Meg.	V1-V1-Blk. Ant. Loading		
75	1 Meg.	R20A150K	RTB-1 Meg.	RTB-1 Meg.	Red-Blk.-Or. AVC Net. Suppressor		
76	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
77	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
78	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
79	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
80	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
81	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
82	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
83	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
84	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
85	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
86	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
87	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
88	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
89	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
90	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
91	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
92	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
93	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
94	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
95	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
96	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
97	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
98	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
99	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
100	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
101	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
102	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
103	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
104	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
105	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
106	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
107	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
108	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
109	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
110	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		
111	50K	23A011	RTB-1 Meg.	RTB-1 Meg.	Grn.-Blk.-Or. AVC Net. Suppressor		

DATE 9/18/15

## PARTS LIST AND DESCRIPTIONS (Continued)

## R F COILS

ITEM No.	USE	REPLACEMENT DATA				IDENTIFICATION CODES	
		DC RES.	HALLICRAFTERS PART No.	MEISSNER PART No.	INSTALLATION NOTES	SPRAGUE PART No.	INSTALLATION NOTES
149	Sec. Coil	1.15	500213	500213			
150	1st IF AM	0.15	500213	500213			
151	1st IF AM	0.15	500213	500213			
152	1st IF AM	0.15	500213	500213			
153	1st IF AM	0.15	500213	500213			
154	1st IF AM	0.15	500213	500213			
155	1st IF AM	0.15	500213	500213			
156	1st IF AM	0.15	500213	500213			
157	1st IF AM	0.15	500213	500213			
158	1st IF AM	0.15	500213	500213			
159	1st IF AM	0.15	500213	500213			
160	1st IF AM	0.15	500213	500213			

## DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS	REPLACEMENT DATA		INSTALLATION NOTES
				SEAD COLOR	HALLICRAFTERS PART No.	
161	Bayonet	8-8	0.15	Brown	38A004	7724 27
162			0.25	Blue		Type 44

## MISCELLANEOUS

ITEM No.	PART NAME	HALLICRAFTERS PART No.	NOTES
164	Switch	602261	Band
165	"	602263	Selectivity
166	"	602262	Reception
167	"	601359	Carrier
168	"	601358	Carrier-Receive
169	"	601359	Noise Limiter
170	Crystal	60A138	455KC
171	3 Stage Var. Cap	16A125	(15-475KPP) Each section (AM)
172	Phasing Control	48C174	(Bandspread-PH)
173	Phasing Control	48C173	
174	Phasing Control	48L182	
175	Phasing Control	44A047	A15
176	Phasing Strip	44B197	A18, A21, A28, A26, A35
177	Phasing Strip	44B196	A19, A23, A27, A36
178	Phasing Strip	44B199	A20, A24, A28, A37
179	Phasing Strip	44A047	A32, A33, A32, A34, A48, A49
180	Phasing Strip	44B196	A47, A42, A46
181	Phasing Strip	44A115	Carrier Level
182	Phasing Strip	52B115	





# VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

## VOLTAGE READINGS

Pin	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	0V.	0V.	6.3VAC	0V.	250VDC	120VDC	8VDC	-
2	7F8	-2VDC‡	0V.	180VDC	0V.	.6VDC	65VDC	6.3VAC	-.5VDC
3	6SQ7	0V.	6.3VAC	1.6VDC	0V.	1.6VDC	155VDC	0V.	260VDC
4	6SH7	0V.	6.3VAC	4.6VDC	0V.	4.6VDC	225VDC	0V.	270VDC
5	6SH7‡	0V.	0V.	0V.	-.4VDC	0V.	35VDC	6.3VAC	35VDC
6	6AL5‡	0V.	0V.	0V.	6.3VAC	.4VDC	0V.	-.4VDC	-
7	6N6	0V.	0V.	0V.	0V.	-.5VDC	0V.	6.3VAC	0V.
8	6J5**	0V.	0V.	160VDC	0V.	-6.4VDC‡	0V.	6.3VAC	0V.
9	6SQ7	0V.	-.4VDC	0V.	0V.	0V.	120VDC	0V.	6.3VAC
10	6V6GT	0V.	0V.	280VDC	270VDC	0V.	240VDC	6.3VAC	12.5VDC
11	5Y3GT	0V.	290VDC	0V.	265VAC	0V.	265VAC	0V.	290VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

## RESISTANCE READINGS

Pin	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	3.6 Meg.	0Ω	.1Ω	0Ω	20KΩ	15KΩ	78Ω	-
2	7F8	22KΩ	0Ω	30KΩ	0Ω	1KΩ	20KΩ	.1Ω	2.2 Meg.
3	6SQ7	0Ω	.1Ω	92Ω	2.6 Meg.	92Ω	15KΩ	0Ω	24KΩ
4	6SH7	0Ω	.1Ω	690Ω	5Ω	690Ω	50KΩ	0Ω	24KΩ
5	6SH7‡	0Ω	0Ω	0Ω	220KΩ	0Ω	130KΩ	.1Ω	120KΩ
6	6AL5‡	INF.	INF.	0Ω	.1Ω	100KΩ	0Ω	100KΩ	-
7	6N6	0Ω	0Ω	1.3 Meg.	1.3 Meg.	400KΩ	0Ω	.1Ω	0Ω
8	6J5**	0Ω	0Ω	25KΩ	0Ω	47KΩ	0Ω	.1Ω	4Ω
9	6SQ7	0Ω	15 Meg.	0Ω	0Ω	0Ω	240KΩ	0Ω	.1Ω
10	6V6GT	0Ω	0Ω	20KΩ	21KΩ	470KΩ	20KΩ	.1Ω	280Ω
11	5Y3GT	INF.	20KΩ	INF.	70Ω	INF.	65Ω	INF.	20KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RECEIVE-STANDBY SWITCH IN RECEIVE POSITION.

\*\* TAKEN IN CM POSITION. NOISE LIMITER OFF.

SENSITIVITY CONTROL FULL ON.

SELECTIVITY CONTROL FULL ON.

TONE HIGH.

- 1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
- 2 - Socket connections are shown as bottom views.
- 3 - Measured values are from socket pin to common negative.
- 4 - Line voltage maintained at 117 volts for voltage readings.
- 5 - Nominal tolerance on component values makes possible a variation of  $\pm 15\%$  in voltage and resistance readings.
- 6 - Volume control at maximum, no signal applied for voltage measurements.

## STAGE GAIN MEASUREMENTS

ANTENNA TO RF GRID	2X	600KC
RF GRID TO CONV. GRID	2X	600KC
CONVERSION GAIN	15X	IN 600KC OUT 455KC
INPUT IF TRANSFORMER	1.5X	455KC
1st IF TUBE	175X	455KC
INTER IF TRANS.	.1X	455KC
2nd IF TUBE	200X	455KC
OUTPUT IF TRANS.	.5X	455KC
AUDIO	35X	400 ~
OUTPUT	28X	400 ~

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 5 volts to the AVC line.

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

Set all controls as follows except where noted otherwise: "Crystal-phasing" to zero, "Sensitivity" at maximum, "Reception" to "AM-MFC", "Selectivity" to "Normal-Sharp", "Volume" at maximum, "CW Pitch" to zero, "Tone switch" to "High", Standby-Receive switch to "Receive" and Noise Limiter to "Off". Set bandspread tuning cap. fully open at all times with exception of Bands 5 & 6 where it only is used for tuning. Use insulated alignment screwdriver for all adjustments.

**10.7 MC IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM**

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1 Direct	High side to rear stator of center section of bandspread tuning cap.	10.7MC (Unmodulated)	Band "5"	50 on logging scale.	DC probe to Point ①. Common to ground.	A1, A2, A3, A4, A5, A6, A7	Turn reception switch to "FM" and adjust for maximum deflection.
2					DC probe to Point ②. Common to ground.	A8	Adjust for zero deflection. Continue with AM alignment in Step 5.

**10.7 MC IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE**

Use freq. modulated signal with 80 % modulation and 450KC sweep. Use 120  $\mu$  sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1 .05 MFD	High side to Pin 4 (grid) of 6BH7 2nd IF Tube (4). Low side to chassis.	10.7MC (Freq. Mod.)	Band "5"	50 on logging scale.	Vertical input in series with .05 MFD cap. to Point ①. Low side to chassis.	A2, A3	Turn reception switch to FM and adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
2 .05 MFD	High side to Pin 4 (grid) of 6BH7 Low side to chassis.					A4, A5	
3 .05 MFD	High side to rear stator of center section of bandspread tuning cap.					A6, A7	
4 .05 MFD	High side to Pin 4 (grid) of 6BH7 2nd IF Tube (4). Low side to chassis.				Vertical input to Point ②. Ground to chassis.	A1, A8	Alternately adjust A1 for maximum amplitude and A8 for maximum straightness of crossover lines with crossover occurring at center of pattern per Fig. 2. Continue with AM Alignment in Step 5.

**AM IF ALIGNMENT**

In Steps 5, 6, 7 and 8 set sig. gen. to exact crystal frequency as follows: Set sig. gen. to approximately 455KC. Turn BFO on and set CW pitch for approximately a 1000  $\mu$  note. Set selectivity control to "Crystal-Sharp" and tune sig. gen. to weakest of the two response frequencies on either side of zero beat. Adjust "Crystal-Phasing" control for minimum audio output. Retune sig. gen. for maximum output on the opposite side of zero beat.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5 Direct	High side to rear stator of center section of tuning cap. Low side to chassis.	455KC (See pre-alignment notes)	Band "4"	50 on logging scale.	Across voice coil	A9, A10, A11, A12, A13	Turn selectivity switch to normal sharp and adjust A9, A10, A11, A12 and A13 for maximum output.
6 Direct						A14	Turn selectivity switch to "Crystal-Broad". Adjust A14 for maximum output.
7 Direct						A15	Turn selectivity switch to "Normal-Sharp". Adjust A15 for maximum output.
8 Direct						A16	Turn reception switch to "CW". Remove CW pitch control knob and adjust A16 for zero beat. Replace knob with zero at index line. Repeat 10.7 MC IF alignment to insure that they have not been detuned in the process of aligning 455KC IF.
9 Direct		10.7MC	Band "5"			A17	Adjust for maximum output. Tune sig. gen. to 11.81MC. If signal is not heard retune sig. gen. to 10.7 MC and adjust A17 counter-clockwise to next peak. Adjust for maximum output and recheck for image. Reassembly receiver in cabinet.

# ALIGNMENT

RFA Dummy consists of 200 MFD cap. in series with 30 microhenry choke with choke shunted by a 400 MFD cap. in series with a 400K carbon resistor.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10 RFA Dummy (see prealignment notes)	High side to ant. terminal "A1". Low side to "A2" with "A2" grounded.	1500KC	Band 1	1500KC	Across voice coil	A18, A19, A20	Adjust for maximum output in order given.
11	"	500KC	"	500KC	"	A21	Adjust for maximum output in order given. Repeat Steps 10 & 11 until no further improvement can be made.
12	"	4.5MC	Band 2	4.5MC	"	A22, A23, A24	Adjust for maximum output in order given.
13	"	2MC	"	2MC	"	A25	Adjust for maximum output in order given. Repeat Steps 12 & 13 until no further improvement can be made.
14 330K carbon res.	"	14MC	Band 3	14MC	"	A26	Adjust for maximum output.
15	"	"	"	Tune for maximum output.	"	A27, A28	Rock tuning cap. and adjust for maximum output.
16	"	6MC	"	6MC	"	A29	Adjust for maximum output.
17	"	"	"	Tune for maximum output.	"	A30, A31	Rock tuning cap. and adjust for maximum output. Repeat Steps 14 thru 17 until no further improvement can be made.
18	"	14MC	Band 3A	Main tuning dial at 20 meter band marker. Band spread at 14MC.	"	A32	Adjust for maximum output.
19	"	14.2MC	"	Main tuning dial at 20 meter band marker. Band spread tuned maximum output.	"	A33, A34	Rock tuning cap. and adjust for maximum output.
20	"	36MC	Band 4	36MC	"	A35	Adjust for maximum output. Tune sig. gen. to 35.1MC. If signal is not heard, retune sig. gen. to 36MC and close A35 to next peak. Adjust for maximum output and recheck for image.
21	"	"	"	Tune for maximum output.	"	A36, A37	Rock tuning cap. and adjust for maximum output.
22	"	18MC	"	18MC	"	A38	Adjust for maximum output.
23	"	"	"	Tune for maximum output.	"	A39, A40	Rock tuning cap. and adjust for maximum output. Repeat Steps 20 thru 23 until no further improvement can be made.
24	"	54MC	Band 5	54MC (On band-spread dial)	"	A41	Adjust for maximum output.
25	"	"	"	Tune for maximum output.	"	A42, A43	Rock tuning cap. and adjust for maximum output.
26	"	46MC	"	46MC	"	A44	Adjust for maximum output.
27	"	"	"	Tune for maximum output.	"	A45, A46	Rock tuning cap. and adjust for maximum output. Repeat Steps 24 thru 27 until no further improvement can be made.
28	"	"	"	44.6MC (See remarks)	"	A17	Tune for fourth harmonic of the second oscillator at approx. 44.6MC. If signal is not heard A17 is adjusted to the image frequency and Step 9 must be repeated.
					CONNECT VTVM		
29 330K carbon res.	High side to out. terminal "A1". Low side to "A2" with "A2" grounded	106MC	Band 6	106MC	DC probe to Point ④. Common to chassis	A47	Adjust for maximum deflection.
30	"	"	"	Tune for maximum deflection.	"	A48, A49	Rock tuning cap. and adjust for maximum deflection.
31	"	89MC	"	89MC	"	A50	Adjust for maximum deflection.
32	"	"	"	Tune for maximum deflection.	"	A51, A52	Rock tuning cap. and adjust for maximum deflection. Repeat Steps 29 thru 32 until no further improvement can be made.

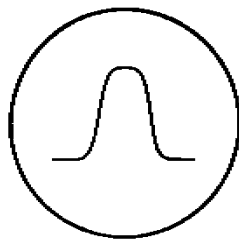


FIG. 1

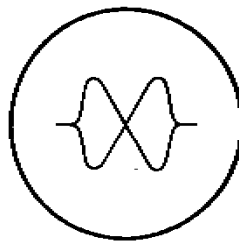
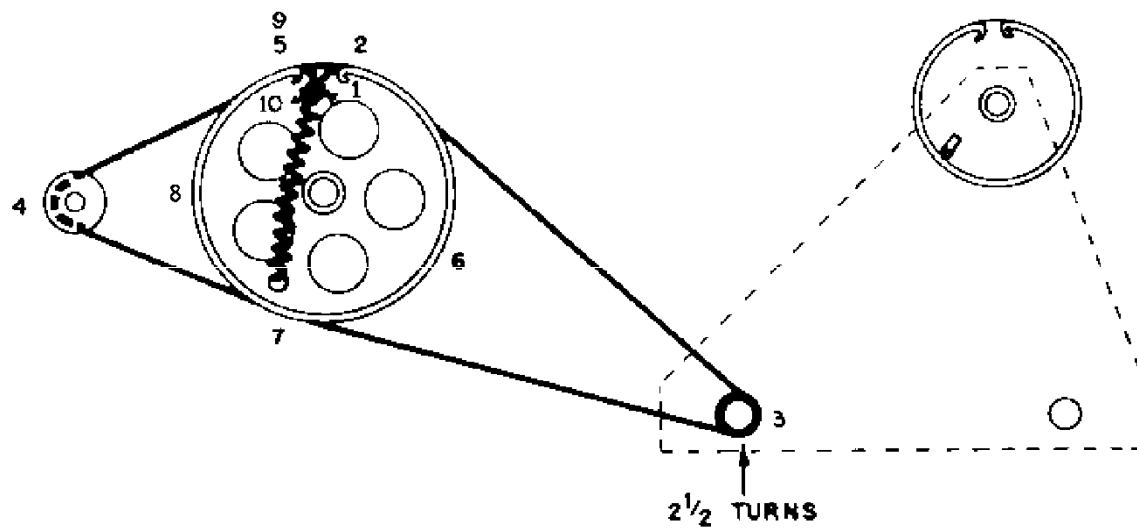
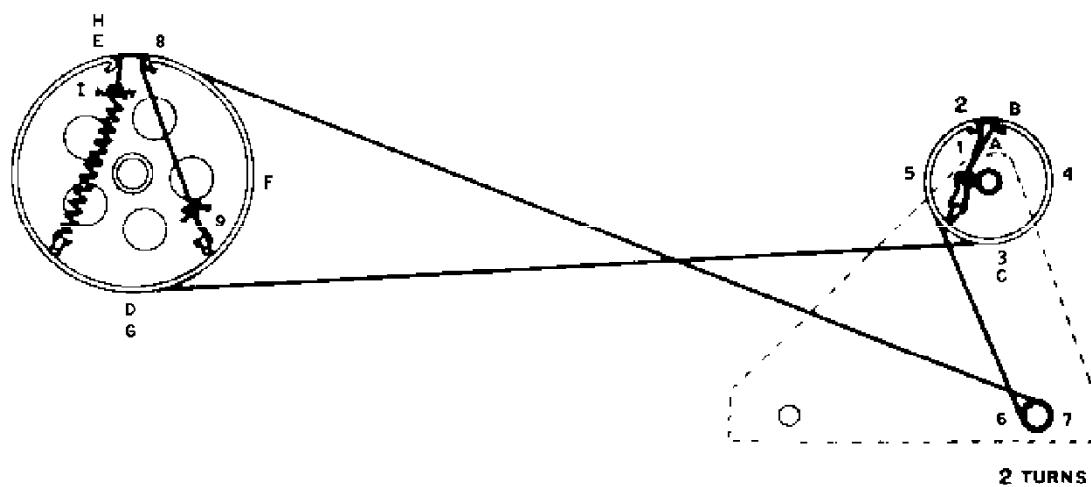


FIG. 2



928348

Fig. 1. Dial cable stringing, general coverage dial



928349

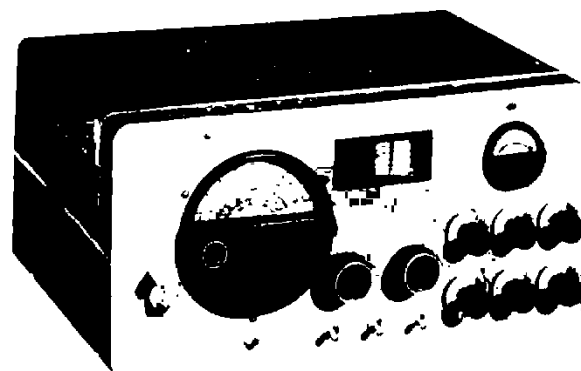
Fig. 2. Dial cable stringing, band spread dial.

# the hallicrafters co.

## SERVICE BULLETIN FOR MODEL SX-43

### GENERAL

Tubes . . . . . Ten plus rectifier  
Speaker Output . . . . . 50-5000 ohms.  
Headset Output . . . . . Low impedance.  
Antenna Input . . . . . For 75 to 600-ohm line or single wire lead-in.  
Phone Input . . . . . High impedance.  
External Power Connector . . . . . Std. octal socket.  
Tuning Range . . . . . Band 1. 140 kc - 1700 kc. AM.  
2. 1.7 mc - 5 mc. AM.  
3. 5 mc - 16 mc. AM.  
3A. 14 mc - 14.4 mc. AM.  
4. 15.5 mc - 44 mc. AM.  
5. 44 mc - 55 mc. AM-FM.  
6. 86 mc - 109 mc. FM.  
Intermediate Frequency . . . . . 455 kc/1.1 mc.  
Power Supply . . . . . 105-125 V. 50/60 cycles AC.  
Power Consumption . . . . . 25 Watts.



92X721

### CARRIER LEVEL METER ADJUSTMENT

1. Connect a jumper between the two antenna terminals and ground.
2. Set front panel controls as follows:  
SENSITIVITY - Maximum.  
RECEPTION - AM/AVC.  
SELECTIVITY - NORMAL/SHARP.  
BAND SELECTOR - 4.  
VOLUME - Maximum. (No signal should be heard.)
3. Set "S" METER ADJ. (See Fig. 3.) on rear chassis apron for zero on the CARRIER LEVEL meter.

### POSITIONING CONTROL KNOBS

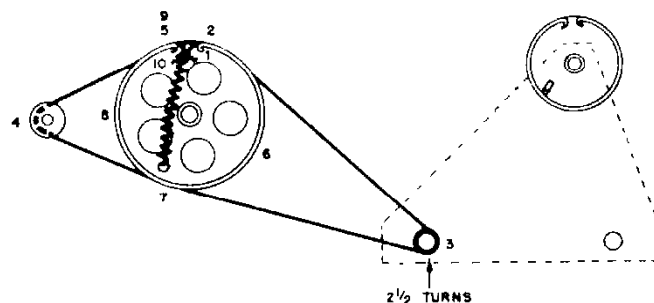
BAND SELECTOR - As required by markings.  
RECEPTION - As required by markings.  
SELECTIVITY - As required by markings.  
SENSITIVITY - Zero at full counter clockwise rotation.  
VOLUME - Zero at full counter clockwise rotation.  
CW PITCH - See alignment chart.  
CRYSTAL PHASING - Zero with plates half meshed.

### RESTRINGING DIAL CORD

Two separate dial drive mechanisms are used: one for the general coverage dial and one for the band spread dial. The stringing sequence for each is shown in Figs. 1. and 2. by a series of number and letters. Use 30 lb. test dial cord. Approximately 51 inches of cord will be required for the bandspread dial drive and about 26 inches for the general coverage dial drive. Note that the cording procedure for the bandspread dial starts with a knotted loop at the driving pulley and is threaded to the driven pulley via two routes, the numbered 1-5 (approximately 24 inches long) and the other lettered A to I (approximately 27 inches long). In production the short, numbered route, string is threaded through first in the bandspread drive.

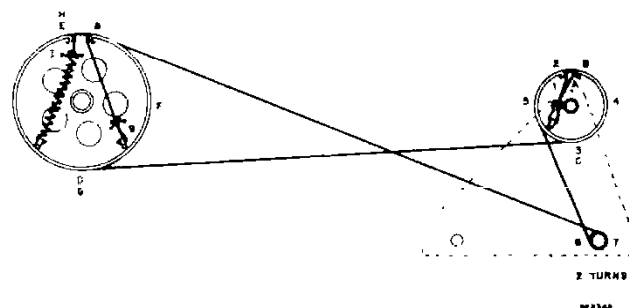
### REPLACING LAMPS

The two dial lamps and meter lamp are accessible through the hinged cabinet cover. Remove two screws holding the metal light shield to expose the dial lamps. Replace these with 6-8 V. 25 MA. GE. #44 (Blue bead) or equivalent. The carrier level meter lamp is made accessible by removing the four screws holding the protective cover located directly behind the meter. Replace this lamp with a 6-8 V. 150 MA. GE. #47 (Brown bead) or equivalent. Do not use a 250 MA. lamp in the meter housing as the excessive heat will discolor the meter scale.



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Fig. 1. Dial cable stringing, general coverage dial



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Fig. 2. Dial cable stringing, band spread dial.

## ALIGNMENT PROCEDURE

It will be necessary to remove the receiver chassis from the cabinet to make alignment adjustments on the i-f stages. The r-f stages receive final alignment through the holes in the bottom of the cabinet to compensate for the close proximity of the cabinet to the r-f coils. The chassis is held in the cabinet by seven screws along the edge of the flange of the front panel and by three screws through the bottom of the cabinet along the rear edge.

The standard RMA dummy antenna specified in the alignment chart consists of a 200 mmf condenser in

series with a 20 uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.

The following control settings are to be set before alignment:

tone Switch	- HIGH
STANDBY-RECEIVE	- RECEIVE
NOISE LIMITER	- OFF
VOLUME	- Max. gain
SENSITIVITY	- Max. sensitivity
Band Spread Dial	- High frequency stop

### ALIGNMENT CHART

Step	Dummy Antenna Coupling	Signal Generator	Signal Generator Frequency	Receiver Control Settings	Receiver Dial Setting	Adjust	Remarks
1	None	Connect to center section (rear stator plates) of low capacity gang.	10.7 mc (No modulation)	BAND SEL.-5 REC. sw.-FM	General coverage dial at mid-scale	S1, S2, S3, S4, S5, S6, S7	Adjust for max. D.C. voltage as measured between pin #7 of the 6AL5 and ground with a V.T. voltmeter.
2	None	See step 1.	10.7 mc (No modulation)	See Step 1	See step 1.	S8	Adjust for zero D.C. voltage as measured between junction of R-50 and C-83 and ground with a V.T. voltmeter.
3	None	See step 1.	455 kc **	BAND SEL.-4 REC. sw.-AM-MVC SEL. sw.-NORMAL-SHARP	See step 1.	S9, S10, S12, S13, S14	Adjust for max. audio output.
4	None	See step 1.	455 kc **	BAND SEL.-4 REC. sw.-AM-MVC SEL. sw.-CRYSTAL-BROAD	See step 1.	S11	Adjust for max. audio output.
5	None	See step 1.	455 kc **	BAND SEL.-4 REC. sw.-AM-MVC SEL. sw.-NORMAL-SHARP	See step 1.	A	Adjust for max. audio output.
6	None	See step 1.	455 kc ** (No modulation)	BAND SEL.-4 REC. sw.-CW SEL. sw.-NORMAL-SHARP	See step 1.	CW PITCH control.	Remove CW PITCH control knob and set shaft for zero beat. Replace knob with zero at index line.
7	Repeat steps 1 & 2 for possible detuning during adjustments in steps 3, 4, and 5.						
8	None	See step 1.	10.7 mc	BAND SEL.-5 REC. sw.-AM-MVC SEL. sw.-NORMAL-SHARP	See step 1.	S15*	Tune slug S15 to high freq. side of 10.7 mc (11.155 mc). Tune for max. audio output.
9	Std. RMA dummy	To terminals A1 and A2 with jumper between A2 and GND.	1500 kc	BAND SEL.-1 REC. sw.-AM-MVC SEL. sw.-NORMAL-SHARP	1500 kc	B*, C, D	Adjust for max. audio output.
			600 kc		600 kc	E*	
10	Std. RMA dummy	See step 9.	4.5 mc	BAND SEL.-2 REC. sw.-AM-MVC SEL. sw.-NORMAL-SHARP	4.5 mc	F*, G, H	Adjust for max. audio output.
			2 mc		2 mc	S16*	
11	330-ohm carbon res.	See step 9.	14 mc ***	BAND SEL.-3 REC. sw.-AM-MVC SEL. sw.-NORMAL-SHARP	14 mc	I*, J, K	Adjust for max. audio output.
			6 mc ***		6 mc	S17*, S18, S19	
12	330-ohm carbon res.	See step 9.	14 mc	BAND SEL.-3A REC. sw.-AM-MVC SEL. sw.-NORMAL-SHARP	M.T. dial at 20M. band line B.S. dial at 14 mc	L*	Adjust for calibration. Check band spread calibration and reset trimmer L if necessary. Increase trimmer cap. to decrease bandspread etc.

\* Note - Calibration adjustment.

\*\* Note - Set generator frequency to exact crystal freq. as follows: Turn on BFO and set CW PITCH for approx. 1000 cycles with signal generator set at approx. 455 kc. Set SELECTIVITY control at CRYSTAL-SHARP and tune signal generator for weakest of two response frequencies on either side of zero beat; adjust CRYSTAL PHASING control for complete null; retune signal generator for maximum output on opposite side of zero beat for the exact IF alignment frequency.

\*\*\* Note - Rock signal generator when making adjustments.

Note - Step 8. adjusts the 11.155 mc oscillator for the dual conversion channel required for AM reception on band 5. After aligning band 5 in step 15, tune to approx. 44.6 mc and pick up fourth harmonic of the oscillator. If the oscillator harmonic falls at approx. 51.3 mcs, the oscillator is oscillating at the low frequency side or image frequency and must be readjusted.

# ALIGNMENT CHART —Continued

Step	Dummy Antenna Coupling	Signal Generator	Signal Generator Frequency	Receiver Control Settings	Receiver Dial Setting	Adjust	Remarks
13	330-ohm carbon res.	See step 9.	14.2 mc ***	BAND SEL.—3A REC. sw.—AM-MVC SEL. sw.—NORMAL—SHARP	M.T. dial at 20 M. band index line. B.S. dial at 14.2 mc.	M, N	Adjust for max. audio output.
14	330-ohm carbon res.	See step 9	36 mc***	BAND SEL.—4 REC. sw.—AM-MVC SEL. sw.—NORMAL—SHARP	36 mc	O*, P, Q	Adjust for max. audio output. Osc. falls on low freq. side of signal.
			18 mc***		18 mc	S20*, S21, S22	
15	330-ohm carbon res.	See step 9	54 mc ***	BAND SEL.—5 REC. sw.—AM-MVC SEL. sw.—NORMAL—SHARP	54 mc	R*, S, T	Adjust for max. audio output
			46 mc ***		46 mc	S23*, S24 S25	
16	330 ohm carbon res.	See step 9	106 mc ***	BAND SEL.—6 REC. sw.—AM-MVC SEL. sw.—NORMAL—SHARP	106 mc	U*, V, W,	See step 1.
			89 mc ***		89 mc	S26*, S27, S28	

For footnotes — see previous page.

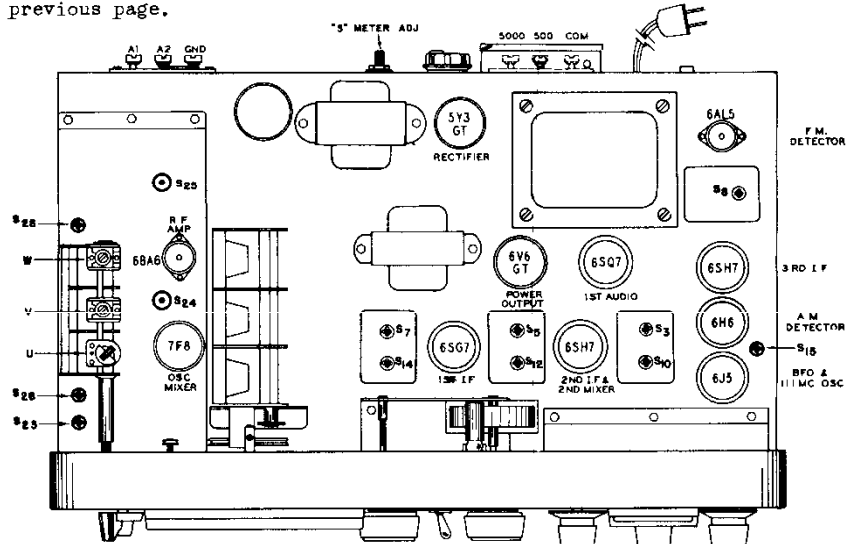


Fig. 3. Alignment adjustments, top view.

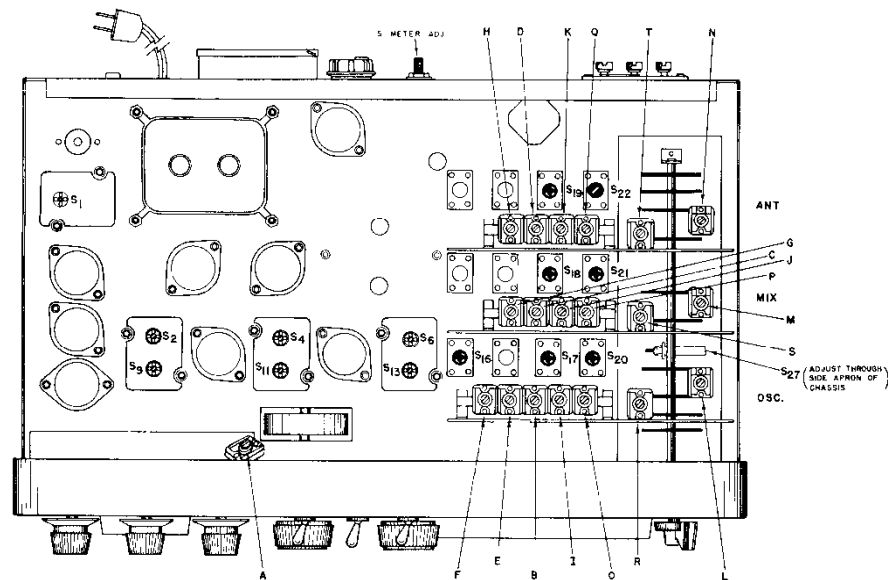


Fig. 4. Alignment adjustments, bottom view.

